



## **The effect of Ramadan diet on the fatty liver and metabolic syndrome in overweight and obese women**

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**OBJECTIVES:** In the twenty-first century obesity is a major health problem in children and adult population, and causes a group of complications as metabolic syndrome. Metabolic syndrome is a group of risk factors of overweight and obesity that increases the chances of diabetes, cardiovascular disease, stroke and peripheral vascular disease. Non Alcoholic Fatty liver disease, "hepatic manifestation of metabolic syndrome", is the most common chronic liver disease in Western world with a prevalence of 20 to 30 percent. Weight loss and normal body weight in combination with high fiber diet, are effective in prevention of metabolic syndrome progression and its complications such as coronary artery disease and diabetes. Ramadan Fasting and proper nutritional principles are useful way to nutritional habits correction and weight loss. This study investigate the effects of diet on metabolic indicators, body mass index and steatohepatitis in obese women with metabolic syndrome that fasting during Ramadan.

**METHODS:** This cross-sectional study was done on overweight and obese women referred to the maternal and childhood obesity research center. Fatty liver disease was identified by ultrasonography and metabolic syndrome blood test was done. Metabolic syndrome serum markers and severity of fatty liver, before and after Ramadan fasting was compared. Data analysis was done using paired t-test and Pearson correlation coefficient.



**RESULTS:** 37 women with mean age of  $41.4 \pm 7.79$  years were studied. 15 women had grade I fatty liver disease, 17 women had grade II fatty liver disease and 5 women had grade III fatty liver disease. Severity of fatty liver disease before and after the Ramadan fasting did not have significant difference ( $\text{Sig} = 0/109$ ). The results showed that cholesterol levels ( $p = 0/001$ ), HDL cholesterol ( $p = 0/008$ ) and LDL cholesterol ( $p = 0/008$ ) at the 95% confidence level and hip circumference at the confidence level of 90% were significantly decreased and WHR at the 90% confidence level was significantly increased. The waist and hip circumference and serum TG level in these women were decreased insignificantly. BMI, WHR, weight, FBS and the Insulin level increased after fasting but only the insulin level increases was statistically significant. It should be noted that both the waist and hip circumference ratio was reduced, but WHR was increased because the in hip, relative reduction was more.

**CONCLUSIONS:** In this study the Ramadan fasting lowers cholesterol, HDL, LDL, TG, waist circumference and hip circumference and increased BMI, WHR, weight, FBS, the Insulin level. The results of this study were inconsistent with previous studies in some of the discussed variables. This question is probably resulting from the nutritional and cultural differences in different cities. Also it is worth mentioning that incorrect diet will get negative result from Ramadan fasting.

**KEYWORDS:** Diet, metabolic syndrome, Ramadan, fatty liver, obesity, overweight